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                          Evolvable hardware -- Designing evolware by cellular programming --
                          Online autonomous evolware -- Speeding-up digital ecologies

evolution using a hardware emulator: Preliminary results -- Challenges of evolvable systems: Analysis and future directions -- Functional organisms growing on silicon -- Logical universality and self-reproduction in reversible cellular automata -- Data compression based on Evolvable hardware -- ATM cell scheduling by function level evolvable hardware -- An evolutionary robot navigation system using a gate-level evolvable hardware -- Genetic evolution of a logic circuit which controls an autonomous mobile robot -- Autonomous robot with evolving algorithm based on biological systems -- Memory-based neural network and its application to a mobile robot with evolutionary and experience learning -- Multiple genetic algorithm processor for hardware optimization -- NGEN: A massively parallel reconfigurable computer for biological simulation: Towards a self-organizing computer -- Architecture of cell array neuro-processor -- Special-purpose brainware architecture for data processing -- Evolvable Hardware: An outlook -- Reuse, parameterized reuse, and hierarchical reuse of substructures in evolving electrical circuits using genetic programming -- Machine learning approach to gate-level Evolvable Hardware -- Evolvable systems in hardware design: Taxonomy, survey and applications -- From some tasks to biology and then to hardware -- Adaptive equalization of digital communication channels using Evolvable Hardware -- An evolved circuit, intrinsic in silicon, entwined with physics -- Through the labyrinth evolution finds a way: A silicon ridge -- Hardware evolution system introducing dominant and recessive heredity -- CAM-Brain: A new model for atr's cellular automata based artificial brain project -- Evolution of a 60 decibel op amp using genetic programming -- Evolution of binary decision diagrams for digital circuit design using genetic programming.

Sommario/riassunto	This book constitutes the strictly refereed post-conference proceedings recording the scientific progress achieved at the First International Conference on Evolvable Systems: From Biology to Hardware, ICES'96, held in Tsukuba, Japan, in October 1996. The volume presents 33 revised full papers including several invited contributions surveying the state of the art in this emerging area of research and development. The volume is divided into topical sections on evolware, cellular systems, engineering applications of evolvable hardware systems, evolutionary robotics, innovative architectures, evolvable systems, evolvable hardware, and genetic programming.